Sub Spec

Approved for Entry
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MIXING DEVICE WITH MIXING RING HAVING OFFSET CHANNELS WITH SPACED BAFFLES

RELATED APPLICATIONS

This application is a national stage application (under 35 U.S.C. 371) of PCT/EP2003/011371 filed October 14, 2003 which claims benefit to European Patent Application 02023466 filed October 21, 2002.

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a mixing device which comprises a shaft (1), a front ring (2), which is positively and non-positively connected to this shaft, an end ring (3), which is positively and non-positively connected to the shaft at a distance A from the front ring, and a loose mixing ring (4), which is freely rotatable and can be moved back and forth between the front ring and the end ring.

Description of Related Art

Devices for mixing polymer melts are known from the prior art.

For instance, DE-A 100 00 938 discloses a mixing device in which an assembly of mixing rings and dividing rings joined alternately one behind the other has been pulled onto a rotor. The mixing rings have grooves, the dividing rings have bores. If melt passes over from the mixing grooves to the bores, it is deflected and divided and is mixed in this way. A similar principle is disclosed in EP-A1 1 000 656, with the difference that some of the rings of the ring assembly are freely rotatable. Both devices have the disadvantage that, on the one hand, they are structurally complex, susceptible to wear and difficult to clean and, on the other hand, high pressures are required to force the melt through the bores.

EP-A 46590 discloses an extruder mixer comprising a rotor and a stator, both the rotor and the stator having rows of semicircular cavities. The cavities of the rotor and stator do not lie one over the other but are offset somewhat with respect to one another. As a result, the extruded material is not only sheared but also divided and rotated. This device too is structurally complex and, furthermore, has the disadvantage that the mixing effect is only sufficient for practical requirements with